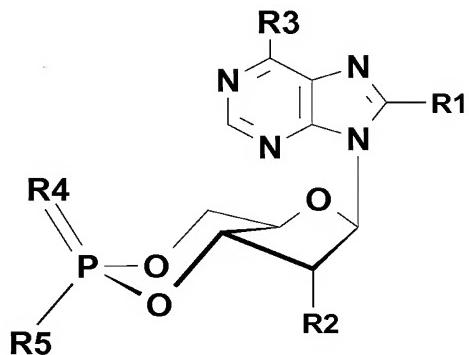


Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently amended): Compound having the structural formula (I)



~~and dideoaza analogues and deaza analogues thereof~~, wherein:

R1 [[R₁]] can be independently H, halogen, azido, alkyl, aryl, amido-alkyl, amido-aryl, OH, O-alkyl, O-aryl, SH, S-alkyl, 2-hydroxyethylthio, 2-aminoethylthio, S-aryl, SeH, Se-alkyl, Se-aryl, amino, NH-alkyl, NH-aryl, N-bisalkyl, N-bisaryl[[.]] or cycloalkylamino;

R2 [[R₂]] can be independently H, halogen, Cl, Br, I, azido, O-alkyl, S-alkyl, Se-alkyl, NH-alkyl, N-bisalkyl, alkyl-carbamoyl[[.]] or cycloalkylamino, silyl;

R3 [[R₃]] can be independently azido, amido-alkyl, amido-aryl, amino, NH-alkyl, NH-aryl, N-bisalkyl, N-bisaryl, NH-alkyl-carbamoyl[[.]] or cycloalkylamino;

and wherein

R4 [[R₄]] is O(H) or S(H); and

R5 [[R₅]] is O(H), S(H), amino, H, alkyl, O-alkyl, O-aryl, S-alkyl, S-aryl, NH-alkyl, NH-aryl, N-bisalkyl[[.]] or N-bisaryl; or

R4 [[R₄]] is O(H), S(H), amino, H, alkyl, O-alkyl, O-aryl, S-alkyl, S-aryl, NH-alkyl, NH-aryl, N-bisalkyl[[.]] or N-bisaryl; and

R5 [[R₅]] is O(H) or S(H);

and pharmaceutically acceptable salts, esters, and/or solvates thereof,

with the exception of proviso that the following named compounds are excluded:

2'-deoxyadenosine-3',5'-cyclic monophosphate;

N⁶-monobutyryl-2'-deoxyadenosine-3',5'-cyclic monophosphate;

2'-deoxyadenosine-3',5'-cyclic monophosphorothioate;;

2'-deoxyadenosine-3',5'-cyclic monophosphoroanilidate;

2'-deoxyadenosine-3',5'-cyclic monophosphate methyl triester;

2'-deoxyadenosine-3',5'-cyclic monophosphate ethyl triester;

2'-O-methyladenosine-3',5'-cyclic monophosphate; ;

2'-O-ethyladenosine-3',5'-cyclic monophosphate;

2'-O-n-propyladenosine-3',5'-cyclic monophosphate;

2'-O-n-butyladenosine-3',5'-cyclic monophosphate;

2'-O-iso-butyladenosine-3',5'-cyclic monophosphate;

2'-O-methyladenosine-3',5'-cyclic monophosphate methyl triester; and

2'-O-methyladenosine-3',5'-cyclic monophosphate phenyl triester.

Claim 2 (Currently amended): The compound of claim 1, wherein

R1 [[R₁]] is H, halogen, azido, O-alkyl, O-aryl, S-alkyl, S-aryl, NH-alkyl, NH-aryl [[,]] or

Se-aryl.

Claim 3 (canceled):

Claim 4 (Currently amended): The compound of claim 1, wherein

R1 [[R₁]] is H, Br, Cl, I, azido, 2-chlorophenylthio, 3-chlorophenylthio, 4-chlorophenylthio, 2-bromophenylthio, 3-bromophenylthio, 4-bromophenylthio, ~~methylamino~~, ~~methylthio~~, ~~ethylthio~~, ~~n-propylthio~~, ~~n-butylthio~~, ~~n-pentylthio~~, ~~n-hexylthio~~, 2-fluorophenylthio, 3-fluorophenylthio, 4-fluorophenylthio, 4-methylcumarinyl, naphtyl-2-thio, phenylthio, 4-nitrophenylthio, 2-aminophenylthio, 3-aminophenylthio, 4-aminophenylthio, benzylthio, phenylethylamino, 3-phenyl-propylamino, 2-methoxyphenylthio, 3-methoxyphenylthio, 4-methoxyphenylthio, ~~isopropylthio~~, benzimidazolyl-2-thio, 2-hydroxyethylthio, 2-aminoethylthio,-pyridinylthio, benzothiazolylthio, 2-methylphenylthio, 3-methylphenylthio, 4-methylphenylthio, 2-isopropylphenylthio, 4-isopropylphenylthio, 2,3,5,6-tetrafluorophenylthio, 4-hydroxyphenylthio, 2,4-dichlorophenylthio, methoxy, ethoxy, propioxy, butoxy, benzyloxy, 4-methylbenzyloxy, 4-

methoxybenzyloxy, 4-fluorobenzyloxy, 4-chlorobenzyloxy, 4-bromobenzyloxy, phenyloxy, cyclohexylamino, benzylamino, ~~phenylseleno~~, 4-isopropyloxyphenylthio, 4-methylthiophenylthio, 6-aminohexylamino, 2,3-dichlorophenylthio, 2,5-dichlorophenylthio, 2,4-difluorophenylthio, 2,5-dimethoxyphenylthio, 2,5-dimethylthiophenylthio, 2,6-dimethylthiophenylthio [[,]] or 2,6-dichlorophenylthio.

Claim 5 (Currently amended): The compound of claim 1, wherein

R1 [[R₁]] is ~~H, Br, Cl~~, azido, 2-chlorophenylthio, 3-chlorophenylthio, 4-chlorophenylthio, 2-bromophenylthio, 3-bromophenylthio, 4-bromophenylthio, ~~methylamino, methylthio, ethylthio, n-propylthio, n-butylthio, n-pentylthio, n-hexylthio~~, 2-fluorophenylthio, 3-fluorophenylthio, 4-fluorophenylthio, 4-methylcumarinyl, naphtyl-2-thio, phenylthio, 4-nitrophenylthio, 2-aminophenylthio, 3-aminophenylthio, 4-aminophenylthio, benzylthio, phenylethylamino, 2-methoxyphenylthio, 3-methoxyphenylthio, 4-methoxyphenylthio, isopropylthio, benzimidazolyl-2-thio, 2-hydroxyethylthio, 2-aminoethylthio, pyridinylthio, benzothiazolylthio, 2-methylphenylthio, 3-methylphenylthio, 4-methylphenylthio, 2-isopropylphenylthio, 4-isopropylphenylthio, 2,3,5,6-tetrafluorophenylthio, 4-hydroxyphenylthio, 2,4-dichlorophenylthio, methoxy, benzyloxy, cyclohexylamino, benzylamino, ~~phenylseleno~~, 4-isopropyloxyphenylthio, 4-methylthiophenylthio, 6-aminohexylamino, 2,3-dichlorophenylthio, 2,5-dichlorophenylthio, 2,4-difluorophenylthio, 2,5-dimethoxyphenylthio, 2,5-dimethylthiophenylthio, 2,6-dimethylthiophenylthio [[,]] or 2,6-dichlorophenylthio.

Claim 6 (Currently amended): The compound of claim 1, wherein

R1 [[R₁]] is ~~H, Br, Cl~~, azido, 4-chlorophenylthio, methylamino, methylthio, 4-fluorophenylthio, 4-methylcumarinyl, naphtyl-2-thio, phenylthio, 4-nitrophenylthio, 2-aminophenylthio, benzylthio, n-hexylthio, phenylethylamino, 4-methoxyphenylthio, isopropylthio, benzimidazolyl-2-thio, 2-hydroxyethylthio, ethylthio, 2-aminoethylthio, pyridinylthio, benzothiazolylthio, 4-methylphenylthio, 3-methoxyphenylthio, 4-isopropylphenylthio, 2,3,5,6-tetrafluorophenylthio, 4-hydroxyphenylthio, 2,4-dichlorophenylthio, methoxy, benzyloxy, cyclohexylamino, benzylamino, ~~phenylseleno~~, 4-isopropyloxyphenylthio, 4-methylthiophenylthio [[,]] or 6-aminohexylamino.

Claim 7 (Currently amended): The compound of claim 1, wherein

R1 is ~~Cl, Br or S-aryl.~~

Claim 8 (Currently amended): The compound of claim 1, wherein
R1 is Cl, Br, 4-chlorophenylthio, 4-fluorophenylthio, naphtyl-2-thio, phenylthio, 4-nitrophenylthio, 4-methoxyphenylthio, pyridinyl-2-thio, 4-methylphenylthio, 4-isopropylphenylthio, 2,3,5,6-tetrafluoro-phenylthio, 4-hydroxyphenylthio, or 2,4-dichlorophenylthio.

Claim 9 (Currently amended): The compound of claim 7, wherein
R1 is 4-chlorophenylthio, 4-fluorophenylthio, 4-methoxyphenylthio, 4-methylphenylthio[[,]] or 4-hydroxyphenylthio.

Claim 10 (Currently amended): The compound of claim 1, wherein
R2 [[R₂]] is H, halogen, Cl, Br, I, azido, O-alkyl [[,]] or S-alkyl.

Claim 11 (Currently amended): The compound of claim 1, wherein
R2 [[R₂]] is H, Cl, Br, I, O-alkyl, S-methyl [[,]] or S-ethyl.

Claim 12 (Currently amended): The compound of claim 1, wherein
R2 [[R₂]] is H, Cl, Br, O-methyl, O-ethyl, O-propyl, O-butyl, O-isobutyl [[,]] or S-methyl.

Claim 13 (Currently amended): The compound of claim 1, wherein
R2 [[R₂]] is O-methyl, O-ethyl, O-propyl, O-butyl [[,]] or O-isobutyl.

Claim 14 (Previously presented): The compound of claim 1, wherein
R2 is O-methyl.

Claim 15 (Currently amended): The compound of claim 1, wherein
R3 [[R₃]] is amino, NH-alkyl, N-bisalkyl, NH-aryl, NH-alkyl-carbamoyl, N-bisalkyl-carbamoyl, amido-alkyl [[,]] amido-aryl.

Claim 16 (Currently amended): The compound of claim 1, wherein
R3 [[R₃]] is amino, NH-phenyl, NH-tert-butyl, NH-tert-butylcarbamoyl, NH-phenylcarbamoyl, NH-acetyl, NH-propionyl, NH-butyryl, NH-benzoyl, NH-benzyl, NH-phenylethyl, NH-phenylpropyl, N-bismethyl [[,]] or N-bisethyl.

Claim 17 (Currently amended): The compound of claim 1, wherein
R3 [[R₃]] is amino, NH-phenyl, NH-tert-butyl, NH-tert-butylcarbamoyl, NH-phenylcarbamoyl; NH-butyryl, NH-benzoyl, NH-benzyl, N-bismethyl [[,]] or N-bisethyl.

Claim 18 (Currently amended): The compound of claim 1, wherein
R3 [[R₃]] is amino, NH-phenyl, NH-tert-butyl, NH-tert-butylcarbamoyl, NH-benzoyl [[,]] or N-bismethyl.

Claim 19 (Currently amended): The compound of claim 1, wherein **R3** is amino [[,]] or NH-tert-butyl.

Claim 20 (Previously presented): The compound of claim 1, wherein **R4** and **R5** are independently O(H) or S(H).

Claim 21 (Previously presented): The compound of claim 1, wherein **R4** and **R5** are O(H).

Claim 22 (Previously presented): The compound of claim 1, wherein the compound is selected from the group consisting of:

8-bromo-2'-deoxyadenosine-3',5'-cyclic monophosphate;
8-(4-chloro-phenylthio)-2'-deoxyadenosine-3',5'-cyclic monophosphate;
8-(4-chloro-phenylthio)-N⁶-phenyl-2'-deoxyadenosine-3',5'-cyclic monophosphate;
8-bromo-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-chloro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-methylamino-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-methylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-fluoro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-methyl-cumarinyl-7-thio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(naphyl-2-thio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-phenylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-nitro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(2-amino-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-benzylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-n-hexylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate;

8-phenylethylamino-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-methoxy-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-isopropylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(benzimidazolyl-2-thio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(2-hydroxy-ethylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-ethylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(2-amino-ethylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(pyridinyl-2-thio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(benzothiazolyl-2-thio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-methyl-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(3-methoxy-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-isopropyl-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(2,3,5,6-tetrafluoro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-hydroxy-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(2,4-dichloro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-(4-chloro-phenylthio)-2'-(N,N-dimethyl)-carbamoyl-adenosine-3',5'-cyclic monophosphate;
8-methoxy-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-benzyloxy-2'-O-methyladenosine-3',5'-cyclic monophosphate;
8-bromo-2'-O-methyladenosine-3',5'-cyclic monophosphorothioate, Sp-isomer;
8-bromo-2'-O-methyladenosine-3'-5'-cyclic monophosphorothioate, Rp-isomer,
8-(4-chloro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphorothioate, Sp-isomer;
8-(4-chloro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphorothioate, Rp-isomer;
8-bromo-2'-deoxyadenosine-3',5'-cyclic monophosphorothioate, Rp-isomer;
8-bromo-2'-deoxyadenosine-3',5'-cyclic monophosphorothioate, Sp-isomer;
8-(4-chloro-phenylthio)-2'-deoxyadenosine-3',5'-cyclic monophosphorothioate, Rp-isomer;
8-(4-chloro-phenylthio)-2'-deoxyadenosine-3',5'-cyclic monophosphorothioate, Sp-isomer;
8-cyclohexylamino-2'-deoxyadenosine-3',5'-cyclic monophosphate;
8-chloro-2'-O-methyladenosine-3',5'-cyclic monophosphate; and
N⁶-tert-butyl-8-(4-chloro-phenylthio)-2'-deoxyadenosine-3',5'-cyclic monophosphate.

Claim 23-31 (Cancelled)

Claim 32 (Previously presented): A pharmaceutical composition comprising the compound of claim 1, and one or more pharmaceutically acceptable excipients.

Claim 33-66 (Cancelled):

Claim 67 (New): The compound of claim 22 comprising 8-(4-chloro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 68 (New): The compound of claim 22 comprising 8-(4-chloro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 69 (New): The compound of claim 22 comprising 8-(naphthyl-2-thio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 70 (New): The compound of claim 22 comprising 8-phenylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 71 (New): The compound of claim 22 comprising 8-(4-nitro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 72 (New): The compound of claim 22 comprising 8-n-hexylthio-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 73 (New): The compound of claim 22 comprising 8-(4-methoxy-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 74 (New): The compound of claim 22 comprising 8-(benzothiazolyl-2-thio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 75 (New): The compound of claim 22 comprising 8-(4-methyl-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 76 (New): The compound of claim 22 comprising 8-(4-isopropyl-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 77 (New): The compound of claim 22 comprising 8-(2,3,5,6-tetrafluoro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 78 (New): The compound of claim 22 comprising 8-(4-hydroxy-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.

Claim 79 (New): The compound of claim 22 comprising 8-(2,4-dichloro-phenylthio)-2'-O-methyladenosine-3',5'-cyclic monophosphate.